



# Winter Meeting and Technology Expo 2023

November 12–15, 2023 | Washington, D.C. | Washington Hilton

## CALL FOR PAPERS

### EXECUTIVE CHAIRS

#### *Program Chair*

Sue Aggarwal (NMNTI)

#### *Assistant Program Chair:*

Jim Byrne (Byrne & Assoc.)

### SUMMARY DEADLINE: MONDAY, JUNE 26, 2023

<b>JUNE</b>	→	SUBMISSION OF SUMMARIES: <b>Monday, June 26, 2023</b>
<b>JULY</b>	→	AUTHOR NOTIFICATION OF ACCEPTANCE: <b>Wednesday, July 19, 2023</b>
<b>AUGUST</b>	→	REVISED SUMMARIES DUE: <b>Wednesday, August 2, 2023</b>

### GUIDELINES FOR SUMMARIES

Please submit summaries describing work that is new, significant, and relevant to the nuclear industry. ANS will publish all accepted and presented summaries in the TRANSACTIONS. Summaries are presented orally at the meeting, and presenters are expected to register for the meeting. Non-U.S. attendees requesting a Visa invitation letter: [registrar@ans.org](mailto:registrar@ans.org). Full papers based on summaries may be published elsewhere, but the summaries become the property of ANS. Under no circumstances should a summary or full paper be published in any other publication before presentation at the ANS meeting. It is the author's responsibility to protect classified, export-controlled, or proprietary information. Submit your summary via the ANS Electronic Paper Submission and Review (EPSR) portal; see link below.

### FORMAT AND LENGTH

1. Use the ANS Template and Guidelines for TRANSACTIONS Summary Preparation provided at [ans.org/pubs/transactions](https://ans.org/pubs/transactions). Summaries that are not based on the ANS template will be rejected.
2. Summaries must be submitted as Adobe Acrobat PDF documents.
3. The minimum length is one full page.
4. The maximum length is four pages, including references, tables, and figures. After you save your document as a PDF, verify that it is still four or fewer pages.
5. Limit title to ten words; limit listing authors to three or fewer if possible.
6. Do not use all capital letters for the title or any part of the authors' names. For the title of the summary, Capitalize the First Letter of Major Words. Author names should be First Name or Initial(s) followed by Last Name.
7. The names of all authors should be entered into the Authors page in the EPSR. List the authors in the same order in which their names appear on the summary.
8. Do not use page numbers, headers, or footers. Do not save your PDF as "read only."
9. Keep the bottom margin clear so there is space for the ANS-applied footer and page number.

### CONTENT

1. Introduction: State the purpose of the work.
2. Description of the actual work: Must be new and significant.
3. Results: Discuss their significance.
4. References: If any, must be closely related published works. Minimize the number of references.
5. Do not present a bibliographical listing.
6. If acknowledgements are required (e.g., to the author's employer), it is the author's responsibility to include the acknowledgement in the summary as either an end-of-summary note or footnote. Please ensure such footnotes do not interfere with the bottom margin, and do not format acknowledgements as headers.

### EXECUTIVE SESSIONS

Would you like to propose and arrange an Executive Session? If so, email the Program Specialist (contact information below). Executive Sessions take a broader look at developments in nuclear science and technology and their impact on policy and markets.

#### SUBMIT A SUMMARY

[epsr.ans.org/meeting/?m=315](https://epsr.ans.org/meeting/?m=315)

#### PROGRAM SPECIALIST

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## 2023 WINTER MEETING: SESSION TITLES BY DIVISION (P) = Panel

### 1. AEROSPACE NUCLEAR SCIENCE AND TECHNOLOGY (ANSTD)

- 1a. Aerospace Nuclear Science and Technology: General
- 1b. Advances in Space Nuclear Reactor Power Systems
- 1c. Advances in Nuclear Thermal Propulsion

### 2. DECOMMISSIONING AND ENVIRONMENTAL SCIENCES (DESD)

- 2a. Commercial Decommissioning (P)
- 2b. Department of Energy Decommissioning and Environmental Remediation Activities (P)
- 2c. The Future of Nuclear Maritime Propulsion (P)
- 2d. Cleaning up the Legacy from Uranium Mining and Milling: An Update on the Ten-Year Plan (P)
- 2e. General Topics in Decommissioning

### 3. EDUCATION, TRAINING, AND WORKFORCE DEVELOPMENT (ETWDD)

- 3a. Cutting Edge Techniques from Education, Training and Distance Education
- 3b. Student Design Competition
- 3c. Innovations in Nuclear Technology R&D Awards
- 3d. Focus on Communications: I (P)
- 3e. Focus on Communications: II (P)
- 3f. Research by U.S. DOE NEUP Sponsored Students
- 3g. Training, Human Performance, and Workforce Development

### 4. FUEL CYCLE AND WASTE MANAGEMENT (FCWMD)

- 4a. International Molten Salt Research in Support of MSR Development (P)
- 4b. Impact of Category II Materials on Back End Activities (ISFSI, CISF, Transportation, Recycling) (P)
- 4c. Potential Impacts of Advanced Reactors to FWDCC Standards (P)
- 4d. Advancement of International Repository Programs (P)
- 4e. Consent-Based Siting of an Interim Storage Facility: Are We on the Right Track? (P)
- 4f. Molten Salt Fuel Recycling
- 4g. DOE Experience with Interim Storage of Advanced Reactors-Like Spent Nuclear Fuel
- 4h. Advances in Direct Disposal of Used Nuclear Fuel
- 4i. Spent Fuel Transportation
- 4j. Alternatives to HALEU: TRU and MOX Fuels
- 4k. Fuel Cycle and Waste Management: General
- 4l. Aging of Waste, Storage, and Transportation Systems
- 4m. University Research in Fuel Cycle and Waste Management
- 4n. Nuclear Fuel Cycle Topics of the US-UK Collaboration Agreement (P)

### 5. FUSION ENERGY (FED)

- 5a. Fusion Energy

### 6. HUMAN FACTORS, INSTRUMENTATION, AND CONTROLS (HFICD)

- 6a. Advances in Sensors and Instrumentation
- 6b. Advances in Human Factors Engineering
- 6c. Autonomous Control and Operation of Reactor Technologies
- 6d. Cybersecurity in Wireless Technologies, Digital I&C, Digital Twins, and Human Factors Considerations
- 6e. Digital Twins and their Applications
- 6f. Human Reliability Analysis
- 6g. I&C Regulations, Standards, and Guidelines
- 6h. I&C for Flexible Plant Operations
- 6i. Online Monitoring, Diagnostics, and Prognostics
- 6j. General Topics in Human Factors and Instrumentation & Control
- 6k. Advances in Digital I&C (P)
- 6l. Extended Analysis of Human Factors for Security Issues and Advanced Operational Environment (P)

### 7. ISOTOPES AND RADIATION (IRD)

- 7a. New and Innovative Developments for the University Research Reactors and Nuclear Science Programs
- 7b. Isotopes and Radiation: General
- 7c. Isotope Production: Addressing Global Isotope Supply and Demand Challenges in the U.S. and Worldwide (P)
- 7d. Reactor and Accelerator-Based Supply Efforts and Demand in the U.S. and Worldwide
- 7e. Advancing Radionuclide Delivery Systems for Cancer Therapy
- 7f. Advances in Isotope Production and Utilization to Address Global Isotope Supply Challenges Affecting Medical Use (P)

### 8. MATERIALS SCIENCE AND TECHNOLOGY (MSTD)

- 8a. Fuel and Materials for Molten Salt Reactors
- 8b. In-Pile Testing of Nuclear Fuels and Materials
- 8c. Advanced Manufacturing/Additive Manufacturing
- 8d. Sensors and In-Pile Instrumentation
- 8e. Nuclear Science User Facilities
- 8f. Accident Tolerant Fuels
- 8g. Nuclear Fuels
- 8h. Aging of Materials
- 8i. Fuel and Materials for Fast Reactors
- 8j. Irradiation Experiments for Nuclear Materials and Fuels Research
- 8k. Actinide Science
- 8l. Machine Learning and Artificial Intelligence Applications in Nuclear Materials

### 9. MATHEMATICS AND COMPUTATION (MCD)

- 9a. Current Issues in Computational Methods – Roundtable (P)
- 9b. Transport Methods
- 9c. Computational Methods and Mathematical Modeling
- 9d. Uncertainty Quantification, Sensitivity Analysis, and Machine Learning

### 10. NUCLEAR CRITICALITY SAFETY (NCS)

- 10a. Data, Analysis, and Operations in Nuclear Criticality Safety
- 10b. ANS Standards Forum (Discussion)
- 10c. Recent Nuclear Criticality Safety Program Technical Accomplishments
- 10d. Critical and Subcritical Experiments
- 10e. Industry NCS Spent Fuel Storage Reg Guide 1.240 (P)
- 10f. CAAS and Emergency Response Issues
- 10g. ANS Forum/Poster Session

### 11. NUCLEAR INSTALLATIONS SAFETY (NISD)

- 11a. Current Topics in Probabilistic Risk Analysis
- 11b. Nuclear Installations Safety: General
- 11c. Highlights of PSA 2023

### 12. OPERATIONS AND POWER (OPD)

- 12a. Advanced Nuclear Reactors and Power Systems
- 12b. Energy Storage Integration with Nuclear Power Plants
- 12c. Excellence and Innovation in the Existing Fleet
- 12d. Hybrid and Integrated Energy Systems
- 12e. Nuclear Energy Markets, Financing, and Economics
- 12f. Operations and Power: General
- 12g. Honors and Awards Special Session (P)

### 13. RADIATION PROTECTION AND SHIELDING (RPSD)

- 13a. Radiation Protection and Shielding: General
- 13b. Computational Methods in Radiation Protection and Shielding
- 13c. Shielding for High-Intensity Laser Facilities

### 14. REACTOR PHYSICS (RPD)

- 14a. Reactor Physics: General
- 14b. Reactor Physics Design, Validation and Operational Experience
- 14c. Reactor Analysis Methods
- 14d. Reactor Physics of Advanced Reactors
- 14e. Reactor Physics of Micro Reactors for Terrestrial and Space Applications
- 14f. Advances in Reactor Design Methods
- 14g. Research Reactors in Support of Advanced Reactors R&D
- 14h. Large Modular Reactors: Practical Options to Achieve an Economical Grid Supply and a Sustainable Nuclear Power Industry (P)
- 14i. DOE MARVEL Microreactor Status and Overview (P)
- 14j. Design and Development of the MARVEL Microreactor
- 14k. Wigner Award Lecture (P)
- 14l. NRC Virtual Test Bed (VTB)
- 14m. Advanced Reactor Demonstration Program (ARDP) Status and Updates (P)
- 14n. Modeling and Simulation Efforts to Support Conversion of Research Reactors to Low-Enriched Uranium Fuel
- 14o. Fifty Years of ORIGEN Impacts
- 14p. Multi-Physics Applications and Analysis
- 14q. Microreactor Demonstrations for Research, Defense, Energy, and Space Applications (P)
- 14r. Research Reactors in Support of Advanced Reactors R&D
- 14s. Advances in Education in Criticality Evaluations and Reactor Physics (P)

### 15. ROBOTICS AND REMOTE SYSTEMS (RRSD)

- 15a. Robotics and Remote Systems
- 15b. Robotic Digital Twin for Nuclear and Energy Applications (P)

### 16. THERMAL HYDRAULICS (THD)

- 16a. General Thermal Hydraulics
- 16b. Computational Thermal Hydraulics
- 16c. Experimental Thermal Hydraulics
- 16d. Two Phase Flow Fundamentals
- 16e. Thermal Hydraulics of Advanced Reactors
- 16f. Young Professional Thermal Hydraulics Research Competition
- 16g. Advances in Material Science and Thermal Hydraulics for Lead Cooled Fast Reactors
- 16h. Fuel Fragmentation, Relocation, and Dispersal
- 16i. Thermal Hydraulics for Accident Tolerant Fuels
- 16j. Highlights from NURETH-20 (P)
- 16k. Thermal Hydraulic Activities and Opportunities in Industry (P)
- 16l. In Memoriam: Dr. Hans Fauske (P)

## 2023 WINTER MEETING: TECHNICAL DIVISIONS

### AEROSPACE NUCLEAR SCIENCE AND TECHNOLOGY (ANSTD)

Jeffrey King, kingjc@mines.edu

### DECOMMISSIONING AND ENVIRONMENTAL SCIENCES (DESD)

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### FUEL CYCLE AND WASTE MANAGEMENT (FCWMD)

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### FUSION ENERGY (FED)

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### HUMAN FACTORS, INSTRUMENTATION, AND CONTROLS (HFICD)

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### ISOTOPES AND RADIATION (IRD)

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### MATERIALS SCIENCE AND TECHNOLOGY (MSTD)

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### NUCLEAR NONPROLIFERATION POLICY (NNPD)

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### OPERATIONS AND POWER (OPD)

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## EMBEDDED TOPICAL MEETING

Advances in Nuclear Nonproliferation Technology and Policy Conference (ANTPC 2023)

Sponsored by the Nuclear Nonproliferation Policy Division (NNPD)

ans.org/meetings/antpc2023/